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EXAMINER

MCHENRY, KEVIN L

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/040,738

Applicant(s)

NAKAHARA ET AL.

Examiner

Kevin L McHenry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sainfort et al. (U.S.P. 5,837,070).

Sainfort et al. teach a process for producing a lightweight, high-strength member that can be used in automotive applications that is made by pouring an aluminum alloy into a mold, such as plate mold, to cast a preform. The alloy contains 6.5-11.0 wt % Si and less than 0.8 wt % Cu. The perform is then hot forged to form a final product and heat treating through solution treatment and aging (see U.S.P. 5,837,070; particularly column 1, lines 6-8; column 2, lines 36-57; column 3, lines 16-22, 59-65).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sainfort et al. (U.S.P. 5,837,070) as applied to claim 1 above.

Sainfort et al. teach the process described above in section 2. Sainfort et al. also

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teach that the aluminum alloy is solution treated between 545-555°C, water quenched, and tempered between 150-195°C for 6 to 24 hours. Sainfort et al. provides an example of solution treatment in which the alloy is solutioned at 550°C for 2 hours (see U.S.P. 5,837,070; particularly column 3, lines 16-22, 59-65).

However, Sainfort et al. do not teach that solution heat treatment can be performed for 4 to 10 hours.

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the teachings of the references above to use the heat treatment cited by the applicant. One of ordinary skill in the art would have been motivated to optimize a heat treatment, such as one taught by Sainfort et al. in column 3, lines 16-22, in order to meet desired mechanical properties. One of ordinary skill in the art would have recognized that by changing the heat treatment, such as by changing temperatures and/or times, one would change and affect the final mechanical properties of the product. One of ordinary skill in the art would understand that solution treatment would be effective in driving precipitates into solution, while aging would be effective in coarsening precipitates in a controlled manner to affect mechanical properties.

5. Claims 1, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-3,581 in view of Sainfort et al. (U.S.P. 5,837,070).

JP 9-3581 teaches a process for producing a lightweight, high-strength member that can be used in automotive applications that is made by pouring an aluminum alloy into a mold, such as through die casting, to cast a perform. The alloy contains 6.5-8.0

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wt % Si and 0.2-0.6 wt % Cu. The perform is then hot forged to form a final product and heat treating through solution treatment and aging can be performed (see JP 9-3581; particularly abstract; paragraphs 1, 2, 5, 11, 13, 16, and 18).

JP 9-3581 does not teach the alloy composition claimed and although it teaches that the cast and forged article can be solution treated and aged, it does not teach the specific heat treatment cited by the applicant.

Sainfort et al. teach a process for producing a lightweight, high-strength member that can be used in automotive applications that is made by pouring an aluminum alloy into a mold, such as plate mold, to cast a preform. The alloy contains 6.5-11.0 wt % Si and less than 0.8 wt % Cu. The perform is then hot forged to form a final product. Sainfort et al. also teach that the aluminum alloy is solution treated between 545-555°C, water quenched, and tempered between 150-195°C for 6 to 24 hours. Sainfort et al. provides an example of solution treatment in which the alloy is solutioned at 550°C for 2 hours (see U.S.P. 5,837,070; particularly column 1, lines 6-8; column 2, lines 36-57; column 3, lines 16-22, 59-65).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the process of JP 9-3581 by the teachings of Sainfort et al. One would have been motivated to do so in order to provide an alloy that can be used in mechanical construction as well as construction for aircraft, spacecraft, and armaments, as taught by Sainfort et al. Furthermore, one of ordinary skill in the art would have been motivated to optimize a heat treatment, such as one taught by Sainfort et al. in column 3, lines 16-22, in order to meet desired mechanical properties. One of ordinary skill in the art would have recognized that by changing the

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heat treatment, such as by changing temperatures and/or times, one would change and affect the final mechanical properties of the product. One of ordinary skill in the art would understand that solution treatment would be effective in driving precipitates into solution, while aging would be effective in coarsening precipitates in a controlled manner to affect mechanical properties.

It has been held that one of ordinary skill in the art at the time the invention was made would have considered the claimed compositions to have been obvious because close approximation or overlapping ranges in a composition is considered to establish a prima facie case of obviousness. See In re Malagari, 182 USPQ 549, Titanium Metals v. Banner 227 USPQ 773, In re Nehrenberg 126 USPQ 383.

The exact amounts of each of the constituents as presently claimed are not disclosed in the prior art; however, the prior art compositions closely approximate or overlap applicant's claimed composition. It has been held that one of ordinary skill in the art at the time of the invention would have considered the claimed compositions to have been obvious because close approximation or overlapping ranges in a composition is considered to establish a prima facie case of obviousness. See In re Malagari, 182 USPQ 549, Titanium Metals v. Banner 227 USPQ 773, In re Nehrenberg 126 USPQ 383.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-3,581 in view of Sainfort et al. (U.S.P. 5,837,070) as applied to claims 1, 3, and 4 above, and further in view of Drury et al. (U.S.P. 5,211,216).

The former references teach the process described above in section 5. However,

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these references do not teach that the perform is pressure cast with a pressure of at least 39 Mpa.

Drury et al. teach a die casting process for aluminum and aluminum-silicon alloys in which the alloy is pressure cast with a pressure of up to about 10,000 to 20,000 psi. Drury et al. teach that this process provides castings with good structural integrity through a lost cost, high volume die casting process and that casting will have improved porosity characteristics. This reference teaches that the casting can be heat treated (see U.S.P. 5,211,216; particularly column 1, lines 7-33; column 10, lines 51-68).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the process of JP 9-3581 by the teachings of Drury et al. One would have been motivated to do so in order to provide a process that made casting with good structural integrity at low cost and in high volumes, as Drury et al. teach. One would have been motivated to do so in order to provide a product with improved porosity characteristics, as Drury et al. teach.

### ***Response to Amendment***

7. Upon carefully reviewing applicant's amendment filed 26 June 2003, the examiner acknowledges the amendments to the specification and the amendments to claim 1. The former drawing objection is withdrawn in view of applicant's amendments.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Imahashi et al. (U.S.P. 5,614,036), Morita et al. (U.S.P. 5,462,612), Scott et al. (U.S.P. 5,055,255), Vernam et al. (U.S.P. 4,412,869), Ohuchi et al. (U.S.P. 4,077,810), Ueno et al. (U.S.P. 6,440,583), Dubost (U.S.P. 4,804,423), Bäckerud et al. (U.S.P. 6,267,829), and Morris et al. (U.S.P. 4,126,486) are cited of interest for illustrating the state of the art in aluminum alloy compositions.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin L McHenry whose telephone number is (703) 305-9626. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G Dunn can be reached on (703) 308-3318. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1234.



Kevin McHenry



M. ALEXANDRA ELVE  
PRIMARY EXAMINER